REMARKS/ARGUMENTS

The present amendment is submitted in response to the Office Action received from the United States Patent Office dated July 13, 2007. In the Office Action, the Patent Office rejected Claims 1-13, 15-25, 27, 28, 34-36, 39 and 40 under 35 U.S.C. §102(b) as being anticipated by *Vinegar et al.* (United States Patent Number: 5,318,116). Claims 1, 2, 13 and 14 were rejected under 35 U.S.C. §102(e) as being anticipated by *McGee* (United States Patent Number: 6,596,142). Further the Patent Office rejected Claim 26 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar* in view of *Bova et al.* (United States Patent Number: 6,000,882). Additionally, the Patent Office rejected Claims 29, 30, 33 and 37 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar* in view of *Balch* (United States Patent Number: 5,228,804). Finally, the Patent Office rejected Claims 29, 31, 32, 27 and 38 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar* in view of *Payne* (United States Patent Number: 4,919,570).

In response to the Office Action, Applicant has amended Claims 1 and 39. Applicant respectfully submits that the application overcomes the rejections raised by the Patent Office. Applicant further submits that the application is now in condition for allowance. Notice to that effect is requested.

The Patent Office rejected Claims 1-13, 15-25, 27, 28, 34-36, 39 and 40 under 35 U.S.C. §102(b) as being anticipated by Vinegar et al. The Patent Office states that Vinegar discloses the system comprising a soil remediation cell; a plurality of multi-functional conduits, each conduit including heating elements; flow channels; and a reaction housing as called for in Claim 1. With regards to the limitation of "without utilizing mechanically driven forced air" and "at least about 80%" destroyed. Applicant submits that the rejection has been overcome with the amendment and for the reasons that follow.

Amended Claim 1 requires a system for remediation of contaminated soil. The system has a soil remediation cell of contaminated soil and a plurality of multi-functional conduits located within said contaminated soil, each said multi-functional conduit defining a reaction housing. The multi-functional conduits including heating elements for introducing heat into the contaminated soil for volatilizing the contaminants. Additionally, the system has located within the

contaminated soil, without utilizing mechanically driven forced air, thereby producing a contaminated vapor, flow channels extending therethrough for removing said contaminated vapor from within said soil remediation cell, and said reaction housing wherein a substantial portion of the contaminants in said contaminated vapor are destroyed so as to produce a substantially non-contaminated vapor in which at least about 80% by weight of said contaminants have been destroyed. Additionally, Claim 1 requires the multi-functional conduits having conduit supports that function as a vapor path for the multi-functional conduits to an exhaust manifold.

Claim 39 requires a method for remediating contaminated soil, comprising: forming a soil remediation cell of contaminated soil, and a plurality of multi-functional conduits located within said contaminated soil, each said multi-functional conduit defining a reaction housing; introducing substantial heat from said multi-functional conduits into the contaminated soil and volatilizing the contaminants located within the contaminated soil, without utilizing mechanically driven forced air such as a vacuum, thereby producing a contaminated vapor whereby the differential pressure between the vaporized contaminants and the pressure in the multi-functional conduit cause the vaporized contaminants to move into the multi-functional conduit; removing said contaminated vapor from within said contaminated soil through flow channels within said multi-functional conduits; introducing said contaminated vapor into said reaction housing; and destroying a substantial portion of the contaminants in said contaminated vapor within the reaction housing by utilizing high temperature heating elements so as to produce a substantially non-contaminated vapor in which at least about 80% by weight of said contaminants have been destroyed.

Vinegar et al. discloses an in situ method for removal of contaminants from soil imposes a vacuum on the soil through perforated heater wells that are positioned in the soil. The heater wells heat the soil to elevated temperatures by thermal conduction. The heater wells are permeable to vapors which emanate from the soil when heated and which are drawn towards the heater wells by the imposed vacuum. An impermeable flexible sheeting on the soil surface reduces the amount of air that is being pulled into the heater well from the atmosphere. A thermal insulator covers the soil surface and reduces heat losses from the soil surface. The heater wells are connected to a vacuum manifold for collection of vapors. A heat front moves away from the heater wells through the soil by thermal conduction, and the superposition of heat from

a plurality of heater wells results in a more uniform temperature rise throughout the well pattern. Soil contaminants are removed by vaporization, in situ thermal decomposition, oxidation, combustion, and by steam distillation. Both the presence of water vapor and the low pressure results in vaporization of the contaminants at temperatures well below their normal boiling points. Moreover, the heater wells and the nearby soil are extremely hot and most contaminants drawn into the wells will decompose with a residence time of the order of seconds. The heater well can also be packed with a catalyst that accelerates high temperature decomposition into simpler molecules. Water vapor and remaining contaminants may be incinerated in line or may be collected in a cold trap upstream from the vacuum pump.

However, *Vinegar et al.* does not teach or disclose said multi-functional conduits including heating elements for introducing heat into the contaminated soil for volatilizing the contaminants located within the contaminated soil, without utilizing mechanically driven forced air and further wherein the system does not utilize a vacuum to encourage contaminants to achieve a contaminated vapor. Additionally, *Vinegar et al.* does not teach or suggest multi-functional conduits having conduit supports that function as a vapor path for the multi-functional conduits to an exhaust manifold as required by Claim 1. Additionally, *Vinegar et al.* does not teach or suggest utilizing differential pressure between the vaporized contaminants and the pressure in the multi-functional conduit cause the vaporized contaminants to move into the multi-functional conduit as required by Claim 39.

On the contrary, *Vinegar et al.* specifically requires the use of a vacuum system on the soil through perforated heater wells that are positioned in the soil. Applicant respectfully submits that Vinegar et al. even without the amendments is NOT anticipated by Vinegar et at. because of the fundamental differences in the systems.

Applicant respectfully submits to the examiner that under 35 U.S.C. §102(b), anticipation requires that a single reference disclose each and every element of Applicant's claimed invention. *Akzo N.V. v. U.S. International Trade Commission,* 808 F.2d 1471, 1479, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986).

Moreover, anticipation is not shown even if the differences between the claims and the reference are "insubstantial" and one skilled in the art could supply the missing elements. *Structure Rubber Products Co. v. Park Rubber Co.*, 749 F.2d. 707, 716, 223 USPQ 1264, 1270 (Fed. Cir. 1984).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631 (MPEP § 2131).

In view of the foregoing remarks and amendments, the rejection of Claims 1-13, 15-25, 27, 28, 34-36, 39 and 40 under 35 U.S.C. §102(b) as being anticipated by *Vinegar et al.* is improper and should be withdrawn. Moreover, applicant respectfully submits that with the amendments, the rejection has been overcome and should be withdrawn. Notice to that effect is requested.

The Patent Office rejected Claims 1, 2, 13 and 14 under 35 U.S.C. §102(e) as being anticipated by *McGee*. The Patent Office states that *McGee* teaches the system comprising a soil remediation cell; a plurality of multifunctional conduits, each conduit including heating elements; flow channels; and a reaction housing as claimed in Claim 1. With regards to the limitation of "without utilizing mechanically driven forced air" and "at least about 80%" destroyed, the patent office argues that these are operational parameters. Applicant respectfully disagrees that these are operational parameters, they are an element of the system. The system requires that with the use of the system, at least 80% of contaminants are destroyed. This is most definitely a limitation on the system.

However, Amended Claim 1 requires a system for remediation of contaminated soil whereby the system has a soil remediation cell of contaminated soil and a plurality of multi-functional conduits located within said contaminated soil, each said multi-functional conduit defining a reaction housing. Additionally, the system requires said multi-functional conduits including heating elements for introducing heat into the contaminated soil for volatilizing the contaminants located within the contaminated soil, without utilizing mechanically driven forced air and further wherein the system does not utilize a vacuum to encourage contaminants to achieve a contaminated vapor. Additionally, Amended Claim 1 requires multi-functional conduits having

conduit supports that function as a vapor path for the multi-functional conduits to an exhaust manifold.

McGee teaches a process for vaporizing volatile contaminants present in soil and removing the contaminant vapors. However, the process in *McGee* utilizes heating the soil by passing current between electrodes buried in the soil and simultaneously injecting water through the electrodes to transfer heat by convection. The coupling of electrical heating with heat transfer by convection improves the efficiency and uniformity of heating. The contaminant vapors are removed by applying suction at extraction wells positioned between the electrodes.

Similar to the Vinegar et al. reference, *McGee* does not teach or suggest soil remediation as taught by the present invention. More specifically, *McGee* still requires mechanically driving forced air in the form of suction. As enumerated above, the present invention does no such thing. Further *McGee* does not teach or suggest multi-functional conduits having conduit supports that function as a vapor path for the multi-functional conduits to an exhaust manifold. Applicant respectfully requests that the examiner revisit this rejection.

Under 35 U.S.C. §102(b), anticipation requires that a single reference disclose each and every element of Applicant's claimed invention. *Akzo N.V. v. U.S. International Trade Commission,* 808 F.2d 1471, 1479, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986).

Moreover, anticipation is not shown even if the differences between the claims and the reference are "insubstantial" and one skilled in the art could supply the missing elements. *Structure Rubber Products Co. v. Park Rubber Co.*, 749 F.2d. 707, 716, 223 USPQ 1264, 1270 (Fed. Cir. 1984).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631 (MPEP § 2131).

In view of the foregoing remarks and amendments, the rejection of Claims 1, 2, 13 and 14 under 35 U.S.C. §102(e) as being anticipated by *McGee* has been overcome and should be withdrawn. Notice to that effect is requested.

The Office rejected Claim 26 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar et al* in view of *Bova, et al.*. Additionally, the Patent Office rejected Claims 29, 30, 33 and 37 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar et al.* in view of *Balch*. Finally, the Patent Office rejected Claims 29, 31, 32, 37 and 38 under 35 U.S.C. §103(a) as being unpatentable over *Vinegar et al.* in view of *Payne*.

It is submitted that the question under §103 is whether the totality of the art would collectively suggest the claimed invention to one of ordinary skill in this art. In re Simon, 461 F.2d 1387, 174 USPQ 114 (CCPA 1972).

That elements, even distinguishing elements, are disclosed in the art is alone insufficient. It is common to find elements somewhere in the art. Moreover, most if not all elements perform their ordained and expected functions. The test is whether the invention as a whole, in light of the teaching of the reference, would have been obvious to one of ordinary skill in the art at the time the invention was made. Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983).

It is insufficient that the art disclosed components of Applicants' invention. A teaching, suggestion, or incentive must exist to make the combination made by Applicants. Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1988).

Applicant respectfully submits that the amendments to the base claims overcome the rejection because each of the above-identified dependent claims sets for limitations to the parent. Applicant respectfully submits that the claims are now in condition for allowance. Notice to that effect is requested.

Claims 2-38 depend from Claim 1; and Claim 40 depends from Claim 39. These claims are further believed allowable for the same reasons set forth with respect to independent Claims 1 and 39 since each sets forth additional novel elements of Applicant's Method and systems for remediating contaminated soil.

In view of the foregoing remarks, Applicant respectfully submits that all of the claims in the application are in allowable form and that the application is now in condition for allowance. If any outstanding issues remain, Applicant urges the Patent Office to telephone Applicant's

attorney so that the same may be resolved and the application expedited to issue. Applicant requests the Patent Office to indicate all claims as allowable and to pass the application to issue.

Respectfully submitted,
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